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at the top with yucca-leaf strands. Over them a thatching of bundles of big bluestem grass or bear grass is tied, shingle style, with yucca strings. A smoke hole opens above a central fireplace. A hide, suspended at the entrance, is fixed on a cross-beam so that it may be swung forward or backward. The doorway may face in any direction. For waterproofing, pieces of hide are thrown over the outer thatching, and in rainy weather, if a fire is not needed, even the smoke hole is covered. In warm, dry weather much of the outer roofing is stripped off. It takes approximately three days to erect a sturdy dwelling of this type. These houses are "warm and comfortable, even though there is a big snow."

The interior is lined with brush and grass beds over which robes are spread. Household equipment is utilitarian and minimal. Basketry receptacles include coiled shallow trays, large twined burden baskets for gathering wild foods, and pitch-covered woven water containers. There may be a few clay pots, unpainted and only occasionally incised. There are gourd cups and hide, gourd, and wooden dishes. Surplus food and clothing are stored in undecorated, envelope-like hide receptacles (parfleches). Ready for use are a metate and a cigar-shaped mano (as often as not of ancient Pueblo manufacture), stone and bone pounders, an awl, rawhide or horsetail hair ropes and tumplines, a fire drill, and combs made of dried and folded grass or mescal leaf.

In or around the camp are objects connected with horsemanship—saddles, bridles, bits, quirts, and saddlebags. Conspicuous, too, are weapons of war and chase—the bow and arrows, quiver, bow cover, shield, wrist guard, spear, sling, flint knives, and clubs.

Ceremonial objects—the pottery drum, a deer- or elk-hoof rattle, buckskin bags of pollen and other sacred substances, and the particular paraphernalia attached to the rites of the individuals of the household—are present but are less likely to be displayed.

The dwelling may contain a musical instrument or two not

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has to be made if the family is to live near "friends." All that can be said is that residence in one place rather than in another may be determined by the presence there of a family with which friendly connections have been established through marriage. 621 602 591

The presence of his own kin in the same local group where he lives with his affinities assures the newly married man of the perpetuation of a good many past ties, as an understanding of the relations between the extended family and the local group suggests. 602 621

The local group is a cluster of encampments in one general locality. It is a division of the larger group, the band. The people in it all camp around some well-known spot from which the local group gets its name. Those who camp around Mora Mountain are called "People of Mora Mountain." This refers to all the people living together in this region. But within the local group there would be other divisions. All would not live at one place. Some would camp on one side of the mountain, some would camp on the other. Others might camp at any favorable spot near water. These smaller groups or camps are decided along relationship lines. That is, all the relatives and those who marry into a certain family live together. 621 596 361 [101]

These smaller units, the extended families, are referred to by means of the leading men in them. Thus, we speak of N.'s encampment, C.'s encampment. The local group is not a relationship group strictly, but the extended family does consist of relatives. If a person asks, "Who are you? To what people do you belong?" you give the name of your band. But if someone asks where you live, you say that you are one of a certain local group. 621 596 101

The local group tie is essentially one of residence and may be severed summarily: 621 602 591

The children are usually members of the local group to which the mother belongs, because a man is supposed to live near and work for his wife's people. When a man of one local group marries a woman of another, his direct affiliation with the first local group is over. He is now related by marriage to people in the second local group. But he has relatives in the first one, and in case of trouble or divorce he would go back there.

Further characteristics of the local group are summarized in this explanation: 621 596 591

The local group consists of a number of extended families living near some prominent family, that is, living around some family who has a good leader. This leader would be expected to lead the men of the local group when they go on a raid or engage in war. But each extended family has its own place to store food. And whenever a girl's puberty rite takes place, people outside the local group come too. [554] [251] [881] [619]

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727 There is no evidence that conventional morality is totally discarded at this time, but there are suggestions that more freedom than usual is allowed:

> The dancing may go on for two, three, or four days. There is much feasting. Some people are eating, others are dancing. There are many marriages during this period. The Chiricahua, when they were captured and taken to Mexico, noticed that, when the Mexican people had a big victory, they always celebrated by dancing and marrying and having a good time. To get even with them, the Chiricahua turn their victories into a celebration and a dancing and marrying time. Many young men take advantage of the occasion.

727 Thoughts of death are not permitted to interfere with the happy mood: "Dead warriors are not mentioned in the songs, and the deaths are in no way formally announced. When the war party returns, the members state the news of the casualties privately." There is no general purifying rite for those who have come in contact with corpses during the fighting. The use by some of "ghost medicine" to stave off evil effects is "an individual matter; they don't do it in a bunch."

462 THE GATHERING AND UTILIZATION OF WILD FOOD PLANTS

222 The responsibility of exploiting the wild-plant resources of the region falls to the women:

> While the man is hunting, the woman gets up before sunrise, builds the fire if the man hasn't already done so, and cooks the morning meal, using meat if there is some, vegetables if not. Then she goes out to gather seeds or plants, leaving the small children with another woman. She gathers yucca fruit, piñon nuts, or whatever is in season and carries it all home to prepare.

Gathering, preparing, and storing fruits and vegetables provide a continual round of labor as the women follow the natural harvests:

> In spring they go out for mescal. They keep going for it for some time. They get plenty of it and store it up. By the time that is done they can go out after the first acorns and bring them in and store them in bags. Then the yucca fruit and the sumac berries and other things are ready.

821 The preoccupation with the growth of wild plants is reflected in the attitude toward the seasons and in the names of the principal time periods. Besides the four seasons, six time periods, beginning with the first signs of spring, divide the year. Their

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names, in order, are: "Little Eagles," "Many Leaves," "Large Leaves," "Large Fruit," "Earth Is Reddish Brown," and "Ghost Face." "Little Eagles" refers to early spring; "Many Leaves" covers the period of late spring and early summer; "Large Leaves" is midsummer; "Large Fruit" (some call this period "Thick with Fruit") designates the harvest time of late summer and early fall. By late fall the hills assume a color for which the term, "Earth Is Reddish-Brown" seems appropriate. Dread of the lifeless winter is expressed in the name, "Ghost Face." The entire year is called "one harvest." "Ten years ago would be ten harvests ago." Periods of time shorter than the six divisions with descriptive names are reckoned from new moon to new moon. "You say so many days from the beginning of the new moon," or, "So many new moons ago."

If food is to be gathered near home, the woman takes her large burden basket and works alone or with her daughter or sister. "They have a little jug to carry drinking water in while they are away from camp. Often they stay out all day. They eat any time they care to." When a long journey is necessary, a larger party of women will set out together. "They go in groups of six or so and keep their finds separately." Should the destination be so distant that the group cannot hope to return for some days, men or youths go along to protect them and to assist in the heavy work.

Through most of the winter and until mid-spring the household must depend on stored vegetables saved from the preceding year. But in the spring the narrow-leafed yucca sends up a central stem which is gathered while it is still green, tender, and without blossoms. Lengths of the stalk are placed on a bed of embers and roasted until they are soft. The charred outer surface is peeled, and the stalks are eaten without further preparation. Thicker stalks are sometimes roasted in an underground oven. A hole is dug in the earth (one is described as four feet long and three and a half feet deep) and a fire is kindled in it. Stones are heated by placing them on top of the burning wood, and the oven is lined with them. The woman peels the pieces of stalk, pounds them or cuts them in half, places them on the

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252 stones, covers them with dampened grass, and heaps a mound of earth over all. If she does this in the morning, the food will be thoroughly steamed by evening.

[251] After the stalks have been cooked this way, they may be sun-dried and kept for some time, even for a year, in a parfleche. When they are wanted, they are soaked in water to soften them and eaten. Or they may be eaten immediately after they have been baked—often pounded—while they are still soft, with fruit from the broad-leafed yucca or some other fruit. This stalk is not the favorite vegetable, but it becomes important when other food is scarce.

[262] Available at this time also are the white rootstocks and the tender lower portions of the shoots of the tule. These are boiled with meat or made into a soup. "We boil the root with a soup bone as some people do turnips." The root is sometimes dried and stored.

[262] By now the clusters of white flowers of the narrow-leafed yucca are in bloom. These are gathered and boiled with meat or bones. Any surplus is boiled, dried, and stored. The buds of still another variety of yucca (unidentified) are opened and dried.

[251] [263] During the process they must be impaled on sticks "as you dry peaches; you cannot put them on a hide because they would stick to it. . . . These are used to sweeten drinks." The drinks are various kinds of "tea" to be discussed presently.

[262] Not long after this an important food, the agave, century plant, or, as it is more commonly known, the mescal, is ready. The stalks, before any blossoms appear, are cut and roasted or pit baked like yucca stalks, but much more important as a food is the lower portion or crown. If the women live far from the [484] place where mescal is plentiful, they make a long trip to obtain it, establish a temporary camp, and prepare it there before returning home. When many crowns are to be baked, a large pit must be dug and many rocks transported to it; therefore, men sometimes accompany the party to assist with this heavy labor. [462] Whether men are present or not, the women are in charge of the proceedings:

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When the stalks are just coming up and are going to blossom, we go to a place 252
where the mescal is plentiful and dig a pit in about the center of the region in which we are going to get the plants. They are big and heavy, and we don't want to carry them farther than we have to. If men are along, they dig the pit while the women start bringing in the plants. There has to be plenty of wood too and some big flat rocks. If the plants are scattered and a long way from the pit, the woman uses a horse to carry them in.

The woman has an oak stick about three feet long, sharpened at the end like a [412]
chisel. She drives this at the lower part [at the stem below the crown], pounding it with a rock, and it [the crown] rolls out. Then she turns the plant over and cuts off the outside leaves with a broad stone knife. Enough of the outside is cut off to expose the white underpart. Then she brings it to the pit.

The pit is round, seven feet or more across and three or four feet deep. This hole is lined evenly with rocks. Then a big pile of wood is brought. This is put into the hole in criss-cross layers, first a layer one way and then a second layer the other. It is built up like this until the pit is just about full. Then more rocks are put on top of this wood. Fire is touched to it—from the east side first, then from the south, then from the west, and from the north. Then the woman who did this prays. They let the wood burn to ashes. Then they put the mescal in. Each woman will leave a leaf on her mescal heads in a certain place so that she can tell her own. Wet grass goes on top of the mescal, then dirt until no more steam comes out.

The smaller mescal they put in during the late afternoon and let them go all night. Sometimes they are ready the next day. To make sure, they take one out, and, if it is not ready, they put it back and let them all go for a while. How long it takes depends mostly on the size. The ones which grow to the south are larger. The largest ones take four days. Usually they take about two days.[9]

"The botton part of the mescal, the part that is put in the 251
oven, has to be eaten at once unless it is to be dried and preserved. It will spoil if it is not dried." Therefore, the leaves, called "wings," are peeled off and put in the sun to dry, and the softer centers are pounded into thin sheets and spread out in the sun. Juice, drained from pounded mescal suspended over a receptacle, is poured on the dried mescal sheets and forms a preservative glaze.

When the mescal is sufficiently dry and cool to transport, the homeward journey begins. Sometimes the "heads" are carried,

[9] One informant, a Central Chiricahua, told of a method of baking mescal without digging a pit. According to him, rocks are heated and scattered on the level ground, the mescal crowns are put on them, and fresh grass and dirt are piled over all. This "oven" has the appearance of a mound.

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Sometimes the "heads" are carried, on horses, in loosely woven, traylike containers made of yucca, and the sun-drying is done at home. Most of the mescal is stored in the sun-dried, caked state. When a part of a dried crown is to be eaten, it is soaked in water until it softens. It may be mixed with juniper or sumac berries, piñon nuts, or walnuts for variety. The leaves have a pithy, inedible center, but the inner surface of each has a soft layer that is chewed or scraped.

Ordinarily, the woman goes out several times to gather mescal, for she must have enough for general use and for storage. Since each operation—the trip to the place where the plants grow, the roasting and drying, and the return journey—requires several days, this is a busy period. By the time the mescal stalks have flowered and the plants are unfit for use, summer is at hand, and other foodstuffs have made their appearance.

In early summer the locust tree is in flower. The woman picks the blossoms and boils them with meat or other foods, or she boils them in water, dries them in the sun, and puts them away. Then, when she wishes to use them, "she can cook them over again." The first of a number of varieties of wild onion is ready, too. Onions are eaten raw or boiled with other vegetables and meat. Later at least two other kinds are gathered. In the early part of the growing season, too, especially when other food is scarce, the woman strips off the bark from the Western yellow pine, scrapes its inner surface, and heaps together the soft, sweet material.

Though most of the sumac berries are not ripe until late summer and fall, one variety is ready now: "It [*Rhus microcarpa*] has a small red berry which is picked and brought back. The berries are spread out, and the good ones are picked out, washed, and put in the sunshine to dry. After being ground, they are mixed with mescal, and the mixture does not spoil."

From midsummer on, in certain localities, the berries of the one-seeded juniper ripen:

> They have a reddish tinge when they are ripe and fall to the ground. The women pick them up and put them in sacks or burden baskets they bring with them. When they are very ripe, they can be eaten raw, or, if they are still very hard, they can be boiled just enough to make them soft. Another way to use

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them is to boil them until they are quite soft and then mash them with the hands to get the seeds out. What is left is boiled down until just a thick juice is left. This is used more for health than food, although it is considered a regular food. It has a laxative effect, and we eat it as the white man eats prunes. It has a pleasant taste; you can eat a great deal of it, and it won't do you any harm.

In midsummer, too, the first of the edible seed-bearing plants are ready. The woman gathers the seeds by running her hand through the tops and dropping the seeds in a hide receptacle. Threshing is accomplished by working the seeds around manually in the sack. To winnow them, the seeds are poured from a tray basket to an outstretched hide below. The seeds are boiled and eaten or ground on the metate with the mano and reduced to flour from which bread is made.

Now such fruits as raspberries, strawberries, and the earliest of the wild grapes can be gathered. All these are eaten fresh. Grapes are sometimes dried and preserved, and raspberries may be crushed, dried, and kept in caked form.

In the mountains in late summer the woman finds such varied fruits and plants as the chokecherry, the mulberry, a species of potato (*Solanum jamesii*, Torr.), and wood sorrel. Chokecherries are eaten raw when they are very ripe and not infrequently are dried, ground, and stored. Dried chokecherries are soaked in water and eaten without further preparation. Potatoes are boiled and eaten soon after they are gathered or are dried, stored, and ground into flour for making bread. Mulberries are served fresh or caked and preserved. Wood sorrel is eaten raw or cooked with other greens. Another potato-like food (*Ipomoea lacunosa*) is available at about the same time. "It is like a potato in taste. It's white and looks like an onion, but it doesn't taste anything like an onion. It's about half the size of an onion. These are eaten raw. You can keep them for a couple of weeks."

During the same period, in the lowlands, such plants as the nipple cactus and the pitahaya yield their fruit. Of the latter, the more important of the two, this description is given:

This cactus is like the giant cactus, but smaller. It grows in Old Mexico. The plant is taller than a man. The fruit is as large as a man's fist. When the pod opens, it is ready to be picked. It is ready about the middle of August. The

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222 262 252 [251]

fruit is red and is eaten raw. The fruit is dried near the place where it is picked and after it is dried it is piled into burden baskets and brought home. Some of it is eaten fresh, but most of it is dried in the sun, caked, and stored. It never gets really dry; it is always sweet and sticky. Sometimes the fruit drops to the ground, and there are many ants in it when you pick it up.

At lower elevations the yellow fruits of the screw bean or tornillo are one of the first of the fall foods to mature. These sweet pods are eaten raw or are washed, dried, and ground into flour for making bread.

For those groups whose territory extends well to the south, the fruit of the giant cactus is available at approximately this time:

We eat the fruit raw when it is ripe. The women take a long reed stem or a pole and pick the fruit off with it, for it grows high on the plant. They cake some of it as they do mescal and yucca fruit. It never gets real dry; it is always sweet and sticky. It is ripe about the last of August and in September. When you eat it, you eat the seeds and all. The seeds are small, like those of figs.

Between the ripening of other foods, the last of the sumac berries are picked. No sooner are these stored than the broad-leafed yucca or datil fruit is ready:

262 251 252 222

When the Chiricahua are in the hills, they prepare yucca fruit for winter food. They gather it in the fall, in the latter part of September here [at Mescalero, New Mexico]. It is a pinkish color on the outside when it is ripe. It is good to eat raw when it is ripe. When it is very ripe, it doesn't have to be roasted. It is just cut open, the seeds are taken out, and it is spread out in the sun to dry. It will keep all winter then.

But most of the fruit is picked before it is quite ripe. The women gather a large amount. They roast it on the coals. When the fruits are black on top, they are taken off, and the burned outside is peeled off. They are split in two, and the seeds are taken out. The fruit is then put on a hide and pounded. Then they put it over a container in a basket and let the juice run down. They can drink this juice or pour it over the fruit again. It makes the yucca fruit soft and sticky. After that they spread the whole mass out to dry in the sun. If rain comes, they have to cover it up. It gets dry in the sun in two days. While it is drying, they take sunflower blossoms and put them on to make it pretty. They pray while they do it.

When it is dry, this fruit can be stored. It will keep like a cracker. During the fall the women put piles of it away for emergency or for the winter. When it is wanted, it is made ready for use by soaking and is then used alone or mixed with other things.

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In the mountains at this season are gathered the sweet red berries of the algerita. When these are cooked a little, they soften to the consistency of a jelly. A portion of algerita berries is dried and kept for winter use. Currants are picked whenever the women, in foraging, come upon them. Hawthorne fruits are utilized when they are found in abundance, but the dependence upon them is slight. The berries of the alligator juniper ripen in the fall and are at once added to the household stores.

Ready at this time also is the fruit of the prickly-pear cactus:

When the fruit is ripe, while it is still on the plant, it is first cleaned of spines with a brush of stiff grass. It is then picked off with tongs of wood made by bending a branch on itself. While it is still held in these tongs, it is again brushed with the grass. Then the woman puts the fruit in her burden basket, and when she has many of them she takes them home. The fruit can be eaten fresh, or it can be dried and saved. It must be preserved by drying or eaten at once.

To dry the fruits, she splits them, takes the seeds out, and leaves them in the sun. They dry quickly if the sun is strong, but during rainy weather it takes a long time. After the seeds are removed, the pulp is mashed sometimes, and the juice that runs from it is put over the fruit again. It is kept in this caked form, for the layer of juice acts to preserve it. If it is thoroughly sun dried, when it is wanted for use, it is usually boiled. Sometimes soaking it in water without boiling will soften it enough for eating.

Sometimes the fruit is mashed, the pulp is thrown away, and the juice is kept for a drink. It is drunk while it is fresh and is considered healthful.

The mesquite beans are now large and ripe in the lowlands. These beans are used in a number of ways. The woman grinds them to flour on the metate and from this flour makes what can best be described as a pancake. Or she prepares a kind of sweet, thick gruel by boiling the beans and working the softened mass with her hands. She also cooks the whole beans with meat; then the seed coats are spit out when the food is eaten.

Walnuts, one of the important products, are sought at this time:

The Chiricahua use wild walnuts. They carry them around in a parfleche. When they want to eat them fresh, they just pick up those that have fallen on the ground. If the nuts have been there for a while and are dry, they just crack them and eat them. If there are many of them, they save some. In the winter they sit and crack nuts and give them to their children.

But if they want to mix them with other things, like mesquite beans, they do

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262 it differently. Then they gather them green, and each woman cuts a long stick,
252 six or seven feet long, just heavy enough so that a person can sit there all day long hitting the nuts and hulling them. One woman will be sitting with hers spread out on the ground before her; another will be a little distance away. They have to do this near water, near a creek, and wash them. Next they spread them
[251] out to dry for many days when the weather is good.

Then in wintertime they use the nuts with mesquite beans or mescal. They sit there and pound the nuts with a stone, shell and all, just as fine as possible. The mesquite beans are boiled and strained. For a strainer they use sticks that cross or a branch that has many twigs. This catches nearly all the coarse material. Then they put the nuts in but do not boil the mixture any more. It is ready to eat then.

[881] When this is finished, you can dip in there with your bowl and hold it to your mouth and drink it like soup. This food is used nearly always at the girl's puberty rite.

[276] It's just the opposite from chewing tobacco. When you chew tobacco, you spit out the juice and leave in the coarse stuff; when you eat this, you swallow the juice and spit out the coarse stuff.

[184] An Eastern Chiricahua added to the above that his people boil the meats of walnuts as well.

222 The nuts of the Western yellow pine are not large enough to
262 gain much attention: "We don't pick them much; just a few now and then." Of much more importance are the seeds of the
[252] piñon pine. "When the outside shell is still green, the women pick many of them, heat them, and then, when they are shaken or stroked, the little nuts come out. Some ripen on the trees by themselves, open, and the nuts fall to the ground. The women pick these up too."

252 The women parch the piñon nuts for a few minutes until "they
262 get a little darker; then they will keep." There are a number of
[251] ways of utilizing the seeds. They may be cracked with a stone and the meats eaten alone, or the meats, when a sufficient quantity of them is shelled, "are mixed with yucca fruit which has been baked on coals; it makes good eating." As in the preparation of walnuts, the seeds, shell and all, may be ground fine on the metate and mixed with other foods. Mesquite beans, mescal, yucca fruit, and sumac berries have been mentioned as other foods with which they are combined.

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The acorns of both the Gambel oak and the live oak are valuable foods, for the acorn is used in a kind of pemmican: 252 262

In the autumn the women wait until the acorns are ripe and fall to the ground. Then they gather many of them and bring them in. Some people leave them in sacks just as they are when gathered and later crack the shells with their teeth and eat the nuts. [222]

But some roast the nuts a little, crack them, and put them out in the sun to dry. Then they use the nuts with the dry [jerked] deer meat and some fat. First they pound the dry meat on a rock and mix it with a little fat. Then they take the acorn meats and pound them up fine. After that they mix the meat and the acorns together. They shape it like meat balls, and these keep all winter. If they are camping in any place, they can have it for any meal. When it is made this way it is all ready to eat at any time. You eat it just as it is. Because it is all prepared, it is a good thing to take on a journey. When a big group is on a journey and a child is hungry, they give it some of this. 262 251 252 [484]

During the summer and fall the women gather various greens for flavoring stews and soups. Lamb's quarter is one of these. It is cooked with meat or bones, chili, and onions. Locust pods, the white seeds of the anglepod, the seeds of the unicorn plant, and still other varieties of wild potatoes and onions are procured at this time. 222 263 [252] [262] [221]

A number of grasses and other plants (among them dropseed grass, tumbleweed, pigweed, spurge, and sunflower) are harvested for their seeds. Most of these are hand threshed as previously described, or a large amount of the seed-bearing tops is cut, put on a hide, dried, and beaten with a stick. The largest stems and leaves are picked out by hand, and the remainder winnowed "by letting them fall to a hide from a tray basket." The same end may be attained by "tossing the seeds in a hide; then the leaves are blown away." 222 262 252

To obtain sunflower seeds in quantity, the woman fills her burden basket with the flowers and later lays them out to dry at home. When the plants are thoroughly dried, the seeds can easily be shaken out. Or, if the seeds are very ripe, the back of the sunflower head is shaken or is given a sharp blow with a stick, and the seeds fall into a burden basket which has been placed under the plant. These seeds are ground up and are added

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222 252 262 [251] to meat dishes to form a gravy, or they are made into flour for bread baked in hot ashes. Sunflower seeds and other seeds are often placed with hot coals in a tray basket and "worked around" until they are parched.

824 [221] In the fall when the tule is yellow with pollen, the tops of the plants are cut off, brought to camp, and dried. Then the dry tops are shaken or struck over an outspread buckskin. Pollen is gathered, without special ceremony, from other plants and from trees by shaking them after placing a piece of well-tanned, uncolored [237] buckskin to catch it. Buckskin is always the proper receptacle. It is said that "pollen would go through cloth," but more important is the feeling that "it would be wrong" to use anything but buckskin for pollen bags and containers.

222 462 [221] From early spring to the onset of winter, the woman gathers fruits and vegetables which grow at different elevations and in different areas. She does not keep at this task steadily, for she has many other duties. But she must be ready at the report of a good natural harvest to leave at once for the region where it is. 222 484 592 621 [596] Often it is near by; but many times the site is so far distant, and the work ahead so time-consuming, that the entire household goes with her and sets up a temporary camp. Using this as a base, the husband hunts while his wife gathers the wild crop that has drawn them there. Not infrequently more than one household or an extended family consisting of a number of households temporarily leaves the larger encampment or local group on such an errand. Thus, in order that the woman may obtain the various foods in the order in which they mature, the household remains a mobile unit, ready to detach itself from the local group at short notice and to rejoin this group or another just as easily.

222 While the women are foraging, they are on the lookout for beehives:

[824] Honey is found in the stalks of meacal, sotol, and the narrow-leafed yucca. The bee deposits the honey in the stalk. The bee which does this is a big yellow one. The women search for honey in these stalks. They gather it in the fall. They split the stalk to find it. It's like candy. I used to be great for honey!

Honey is also obtained from a large yellow bee that nests in the ground. To secure this store, the device of allowing the bees to

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252 262 "The stomach isn't often eaten. Now when we butcher a cow, the stomach is thrown away."

Birds that are considered edible are most often boiled. Turkeys are eviscerated, plucked, and then boiled, for instance.

251 [462] It is the woman's task, also, to preserve any surplus meat by "jerking" it:

> She takes the thick parts, cuts them thin, and hangs them up to dry in the sun. To use the meat after it is dried, she pounds it up with a stone. It can be mixed with fat then and eaten like this without being cooked. Or even without the fat it is used on the march and in emergencies. When the people are in no hurry, this pounded meat can be added to soup, boiled in water, or fried. It will soften when boiled in water. This dried meat, in strips or in pounded form, can be kept in caches or carried in sacks. Jerked meat, when the people are camping in one place for a time, is laid over the higher limbs of a near-by tree.

THE PREPARATION OF BEVERAGES

273 462 [292] The preparation of beverages, both alcoholic and nonalcoholic, is classified with cooking and is, therefore, the task of the woman. Of tiswin-making it was said: "A man would never [558] make tiswin. It would lower his standing. One man used to [156] make it, but he was a roughneck, and didn't care about his standing. He lowered himself many times."

292 The juice of the prickly pear is occasionally drunk, but "for health" rather than for quenching thirst. Drinks which are compared to commercial coffee and tea are described:

> In those days when coffee was scarce, some people used the bark of different trees, such as oak [Gambel oak] to make a drink. Some used a plant for tea. It is [824] better than the tea you buy. The English name for it is lip fern. It grows all around here. There is another plant [cota] that is used for tea too. To make it, some is just broken into convenient pieces, put in a pot, boiled, and the water drained off. It is about the same color as store tea and tastes much the same.

273 [824] Alcoholic beverages are made from mescal, sotol, mesquite, and, more recently, from maize and wheat. Tiswin, the maize drink, is the only one of these beverages which is made or con- [554] sumed in appreciable quantities. The people have become very fond of this mild beer, and the services and company of a woman who can make it well are in constant demand.

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THE STORAGE OF FOOD AND SURPLUS POSSESSIONS

251 •

Only a limited amount of preserved food can be carried in parfleches and sacks. The rest must be cached. "In those days we had no place to store things when the women had dried a great deal of yucca fruit, mescal, and berries. So we took this food to a hole in the rocks, to a little cave."

These caches are in rocky caves. I've never known them to make one in the ground. This is their secret supply. They can roam around away from this place and come back toward it when they are hungry. Then they get out just so much. They often have valuables in there—extra baskets and other things. An individual household might have its own cache, or several camps of related people might put their goods in together.

This is the way it is fixed on the inside. First a layer of rocks is put down. Then a great deal of oak brush is laid on the rocks. The parfleches are laid on this. Inside each parfleche are layers of food, layers of mescal or yucca fruit, each layer separated from the others by grass. Sticks are placed between the parfleches. The entrance is closed up with rocks and then plastered with mud so the room is sealed and airtight. Then they fix the place over with grass and dirt. You can hardly tell it from the solid mountainside. Food will keep it there for a year or so.

Perhaps they are camping a long way from that cache and they run low on food. They can send a man after some of the provisions then. He closes up the entrance again just as though nobody had ever been there.

261 [431] [596] [252] [251]

Food is not considered an individual or personal possession. The successful hunter sends his wife to her parents with the game he has procured, or a large share of it. Most often the women of the extended family prepare the food from combined stores and hide any surplus in one cave cache.

261 251 421 768

The disposition of the stored food after the death of the woman who was responsible, in whole or in part, for gathering and preparing it, is a clue to the concept of joint ownership. One of the most solemnly respected death customs is the destruction of all objects which belonged to the deceased or were intimately associated with him. But:

If a woman has some food stored up like that and she dies before she uses it, many times it is used afterward. It is not considered her personal property.

The cached food belongs to the relatives as well as to the one who puts it away, but only to the family and the relatives of the woman. If the family is

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dying out, more distant relatives are told about the cache, and the secret spreads out in this way, so the stores will be of use to those who need them and will not go to waste.

AGRICULTURE

No attempt was made to cultivate crops until very recent times. One, and perhaps two, of the three major subdivisions or bands raised no crops at all until the modern reservation period. The oldest Southern Chiricahua informant stated categorically: "My people did not practice farming. The Indians had many plants which were given to them [by nature] and did not have to farm. They moved around too much also." The Central Chiricahua were little more inclined toward agriculture. One of them observed, "I do not think the Chiricahua ever planted before they came under the influence of the whites." In 1873, shortly after the establishment of a reserve for the control of the Central and Southern Chiricahua, the first agent reported:

> In regard to the future prospects for farming operations by these Indians, I would state that I have conversed with Cochise and many of his head-men upon this subject repeatedly, and I am of the opinion that it will require some little time to bring them into the traces and make them submit to this exaction, which must eventually be required of them. They have never been an agricultural people, and claim that they do not know how to farm.[10]

But it is possible that the example of neighboring peoples who cultivated the land may have led to experiments on the part of individual families, as this statement of a Central Chiricahua suggests: "Even in Old Mexico, the Chiricahua tried to farm a little."

The Eastern Chiricahua, who seem to have had earlier friendly relations and trade contacts with the Spanish-speaking townspeople, began to farm even before the modern reservations were established. By 1869, according to government reports, the leaders of this band were complaining that they were being driven from lands where they used to plant.[11] Testimony from informants corroborates these old reports: "These Eastern Chiricahua Indians farmed before the whites came. They tell about

[10] *Report of the Commissioner of Indian Affairs*, 1873.

[11] *Ibid.*, 1869.

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In discussing the various pollens used ritually, an informant included corn pollen and remarked. "You can get some pollen from corn; they used some of this a long time ago."

As in the case of other food products, it is the woman's task to cook and preserve the corn:

They would build a big fire and bring in load after load of the corn in sacks. Three or four women would work together. They would sit there and shuck corn and put it in the fire and let it get brown on top. Then they would throw it to a place where another woman sat. She would take the ears, cut off the kernels, put them on a clean hide, and throw away the cobs. Then they spread it out in the sun to dry. They would leave the corn out there for a week or two until it was very dry. They can carry that corn around then, and it won't spoil. It will keep for a year. They don't have to keep it in a cool place either. They store it in parfleches and use it in winter.

In the winter when the snow gets to be two or three feet deep, a man goes out and kills game and brings it in. Then they can use the dry corn with meat and bones, letting it boil together for three or four hours. It surely makes a good stew! We're using it right now, for we stored up last summer's corn. This dried corn is used at almost every puberty rite now too.

The dried kernels are also roasted or parched:

I saw my people cook corn in a shallow basket many times. They put several pounds of corn in the basket with some hot coals and keep working it around. The corn kernels split, and then they take them out and fill it up again.

Another corn dish reflects the influence of Mexican townspeople:

The Chiricahua never boiled the corn in the husks. They stripped off the husks. They cut off the corn kernels and piled them up. They ground the corn on a rock, using a big stone in the hand [mano and metate]. In those days flour was hard to get, and they made bread out of the ground corn. They used the corn husks to make a sort of tamale. They put some corn meal in a cornhusk and wrapped it up, tying it with a thin strip of cornhusk. Then they put it in water to boil with meat and bones. If they had chili, they put it in with the corn meal.

In season the corn is eaten fresh:

When they had the green corn, they cut the end off after husking it, broke it in two, and put it on to boil with bones or meat. In summer when the corn was ripe, they went out and brought in lots of it.

HOME INDUSTRIES OF WOMEN

In addition to her other tasks, the woman must furnish those things essential to the proper running of the household:

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certain animal's fur or flesh was at its best at the particular time, the Apache was present to share in the harvest. 221

In former times the country of the Apache was a difficult one for the uninitiated to cross. The lowlands were hot and dry and made thorny traveling. A glimpse of water turned out more often to be a mirage. Wide arroyos and washes, cut by the torrential flows which often follow the sudden rains of the surrounding mountains, barred the passage. The tangled brush of the foothills made progress slow, and the high ranges were a formidable barrier to one who was not acquainted with the passes and short cuts. 133 484

The Apache made perfect familiarity with this region in all its aspects an ally to his safety. He knew the water holes of the flats. He knew the travel distance from point to point and, therefore, how much food and water to carry. He was aware of the shortest passes and best hiding places in the mountains. If cut off from his own group, he knew where he was likely to find other parties of Apache camping, and he was trained to endure hardship and to shift for himself in this environment until he could make contact with friends. 133 484 182 823

But, though the Apache helped themselves freely to the plant and animal life of the lowlands, it must not be thought that they felt equally at home in both the plains and the mountains. After all, they were essentially mountain people. In the lowlands they had serious competitors, such as the Plains Indians, whom they acknowledged to be their equals and even their masters in knowledge of such country and its resources. But in the mountains they felt confident and secure. Here they had their retreats and their cave caches of food supply laid up against need and emergency. Army officers have commented often enough upon the difficulty of finding and besting the Apache in their mountain stations. 484 182 823 [186] [251] [648]

For the original habitat of the Mescalero, portions of southern New Mexico may be taken as an example. The west side of the great plains of New Mexico, Texas, and Mexico is a region consisting of isolated mountain ranges and intervening plains or broad, open valleys. Several of these val- 133

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Agriculture has never exerted influence enough to figure in Chiricahua or Mescalero Apache ritual, belief or myth except in one instance, where there is an association between the growing crop and the cricket. Crickets are placed around the field and prayers are addressed to them to help the crops grow. The Mescalero put a live cricket with the seed to be planted and take care not to kill a cricket lest their crops be reduced. 241 825 [796] [773]

Informants reported that their maize was blue and red mixed and that they never had either pure yellow or pure blue varieties. Samples of maize grown at present on the Mescalero reservation are mixed blue and white. Also in an old parfleche purchased from a Mescalero Indian were found dried maize kernels which were represented by informants as the type grown formerly by the Mescalero. Mr. Volney Jones, of the Ethnobiological Laboratory of the University of Michigan, reporting by correspondence upon these grains said: "It is of a type which is grown by some of the Pueblo Indians but is very much smaller. The type is intermediate between flint and dent, having the flinty or hard consistency of flint corn but the grain shape of dent corn with only a slight tendency to dent." 243 137

Maize was usually cooked like mescal, in an underground oven, by the Mescalero. Wood was first burned to hot ashes in the pit, then the whole ears were sprinkled with water and thrown in. They were next covered with grass and dirt and cooked over night, after which they were removed and stored, husk and all, and did not mould. When desired for a meal the ears were boiled and were said to taste like fresh maize. 252 [251].

Another method of preparation was to roast the ears as described above, cut off the grains, and dry them, and store them in sacks until ready for use. The Chiricahua informants claimed that they did not roast maize in underground ovens although they saw the Navahos do it. [251]

Maize was also dried on the cob. All except two husks were removed. Then it was dried in the sun by tying these two husks together and hanging the ears up on strings or on trees. 251

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noon of this day so as to prevent rain. The following morning all the mescal is removed. 252

While the mescal is roasting the women are supposed to stay away from their husbands, and if it is not completely roasted when removed from the pit the Indians believe the women have disobeyed; also that the men should have known better. This is somewhat similar to the view held by the Pima regarding the roasting of mescal, for when the crowns were not cooked thoroughly the difficulty was attributed to the incontinence of some of the members of the party (*25*:70; *4*:11). [834] [171]

The pulpy centers of the black, roasted crowns are released from their charred leaf bases and pounded vigorously into thin sheets on a rock. This brown, juicy pulp is spread out to dry on "mescal cradles," very loosely woven shallow or tray baskets made from the leaves of *Yucca elata*, and in these the prepared mescal is carried home. Unfermented mescal juice is often sprinkled over mescal when being dried. This gives it a glaze which aids in preserving it. It may be eaten as soon as baked or dried and stored for future use in hide containers (parfleches). When wanted, the desired amount is cut off, soaked in water, and when softened the water is squeezed out and the mass eaten without further preparation. A piece of crown is cut off and chewed and the inner side of the leaves chewed and scraped, much as we eat globe artichokes. When the pithy center of the leaf is reached it is discarded. Mescal is sweet, having an agreeable taste somewhat like molasses, and a mild laxative effect. [415] [824] [251] 262 [251] [415] [252]

Many are the combinations in which mescal is used. After the dried product has been softened by soaking it is kneaded together with ground piñon seeds or walnuts (at present peanuts may be used) until the whole is of a doughy consistency; it is then ready for consumption. Mescal mixed with juniper berries (*Juniperus scopulorum*) is another favorite food, while the fruits of the three-leaved sumac (*Rhus trilobata*) are also ground with mescal and the mixture dried and stored for future use. Marcy (*13*:201), 252 262 [251] [137]

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252 writing of Apaches in the vicinity of the Guadalupe moun-
262 tains, made the following comment in the year 1849 concerning the preparation of mescal: "... we have this evening for the first time seen the Maguey plant which constitutes almost the only vegetable food that the Apaches and southern Comanches get for a great portion of the year. They prepare it by boiling it until it is soft, then mash it into a paste, and I am told that in this form it makes a very palatable, nutritious food." In view of the fact that no record has been encountered elsewhere of mescal having been pre-
[114] pared by boiling, and present day Indians have no knowledge of such preparation, it is possible that Marcy had some other plant in mind.

[137] Another well known desert plant, sotol *(Dasylirion wheeleri)* was utilized in much the same way as mescal. The crowns were gathered when the flowers were beginning to emerge, prepared in the same way as was mescal and
[251] baked for the same length of time. When baked they were removed from the pit, stripped, pounded to a pulp on a rock, and spread out to dry on "mescal cradles." The product was usually saved for winter, when it was eaten like a cake. Sotol crowns were not so desirable for food as those of mescal since they are rather hard and woody, only the youngest and most tender portions being edible.

[137] Occasionally the emerging sotol flower stalks, as well as those of bear grass *(Nolina microcarpa)*, mescal *(Agave parryi)*, and amole *(Yucca glauca)*, were removed, placed on a bed of embers and roasted for about fifteen minutes, after which the outer charred portion was stripped off. The central edible portion was white, soft, sweet, and quite palatable and was regarded as the most delicious portion of the plant. These stalks might also be boiled or eaten raw. Just as the stalk came into bloom it was removed from the plant, peeled, cut into pieces and boiled. It was then dried and stored to be used as a vegetable.

[137] Still another characteristic plant of portions of the American Southwest is the narrow-leaved soapweed or palmilla *(Yucca elata)*. The crowns of this species were gath-

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The crowns of this species were gathered any time from the middle of March to the end of summer, the portion of the stem from the ground to the leaves being peeled and baked overnight in an underground oven in a manner similar to that in which mescal was prepared. The yellow-to-brown baked product was known as *nigahe*. After being dried in the sun, broken into pieces, and softened in water the rather sweet product was ready to be eaten. The tender central leaves of the related datil *(Yucca baccata)* were cooked in soups, boiled with meat, and used in various similar combinations.

The large flowers of the narrow-leaved *Yucca elata* were also boiled and eaten as a vegetable, but the less palatable ones of the broad-leaved *Y. baccata* were eaten only if they could be obtained before the summer rain, since the Apache maintain that they are bitter thereafter.

The fruits of several species of Yucca were also utilized as food. The somewhat banana-shaped fruits of the datil *(Y. baccata)*, as well as of the palma *(Y. macrocarpa)* were gathered before they were fully ripe, laid on grass *(Andropogon furcatus)* on the ground, covered with the grass, and allowed to finish ripening in the sun. After roasting in hot ashes the hard black covering was stripped off, the fruit split lengthwise and the seeds removed. The white pulp was then ground and made into large cakes, which might be stored indefinitely. Frequently the roasted fruit was pounded to pulp on an animal hide and allowed to drain in a basket placed over a pan. The juice might be drunk or poured over and mixed with the cake pulp, making the latter soft and sticky as well as aiding in preserving it. In either case the pulp was spread on Yucca leaves to dry for two days in the sun, being always adorned with sunflower blossoms to "make it pretty." The Indians prayed while placing the sunflowers, the ceremonial significance being that the sunflower was used as a symbol of the fructifying influence of the sun, and this use constituted a prayer that the sun continue to make the yield plentiful year after year. The Mescalero Apache tell of a Yucca which grows near El Paso and has a "white" fruit and sweet sticky buds. They were

2: Castetter and Opler N, E-5 (1931-1934)1936
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263 picked, cut open, dried on sticks, and used in sweetening different foods.

262 [178] The fruits of various genera of cacti are still used as food but no longer constitute an important article of diet among these Apache. Formerly the Chiricahua Apache, [137] who ranged in western New Mexico, southeastern Arizona, and to the south in Old Mexico, utilized as food the fruit of the sahuaro or giant cactus *(Carnegiea gigantea)* and of the organ-pipe cactus or pitahaya dulce *(Lemaireocereus thurberi)*. Their name for it was *madaya*, an Apache corruption of pitahaya. [171] The gathering and utilization of these fruits by the Chiricahua Apache was not unlike that reported by Castetter and Underhill *(5:21)* for the Papago; the reader is referred to that paper for a discussion of the [184] subject. The Mescalero Apaches never have used these species as they do not grow within their present or past range.

252 262 [413] [824] [251] [824] The ripe fruit of a number of species of Opuntia, prickly pear cactus, was commonly utilized as food. The ripe fruits, or tunas, were removed with a pair of wooden tongs, made by doubling a pliable branch, and cleaned of spines with a brush of stiff stems of sacaton grass *(Sporobolus wrightii)* while held with the tongs. The fruit was then placed in burden baskets and taken home to be eaten fresh or dried and stored. To dry, the fruit was split lengthwise, freed of seeds, and placed on big blue stem grass *(Andropogon furcatus)* in the sun. Sun-dried fruit was usually boiled before eating, although soaking in water sometimes softened it [251] enough for use. Sometimes, after the seeds were removed, the fruit was mashed into a pulp and stored in this caked [953] form. Many of the Indians of the Southwest contend that these tunas or nopales must be eaten with discretion as too much of the fruit causes a fever; Bourke *(2:44)* corrobor- [222] ates this. The Chiricahua and Mescalero Apache women [482] collected the tunas in large baskets carried on their backs, suspended from a tumpline which rested on the upper part [251] of the chest. The split fruit was spread out to dry in the sun. Tunas formerly constituted a very important Apache food.

2: Castetter and Opler N, E-5 (1931-1934)1936
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food. The fruits of the hedgehog cactus *(Echinocereus coccineus)*, the salmon-flowered hedgehog *(E. lecanus)*, the desert strawberry *(E. fendleri)*, the golden spined strawberry *(E. chrysocentrus)*, and the rainbow cactus *(E. rigidissimus)* were gathered occasionally and eaten fresh. Several species of *Neomammillaria*, including the sunset cactus *(N. grahami)*, the snowball pincushion *(N. olivia)*, and the horned toad cactus *(N. mainae)* were at times eaten without preparation, although fruits of the sunset cactus were often dried and stored for winter use, when they were cooked before being eaten.

Mesquite *(Prosopis glandulosa)* is one of the most widespread and best known plants of the Southwest and its sweet, nutritious fruits have been and still are rather extensively used as a source of food. The beans of the mesquite were gathered, boiled, pounded on a hide or ground on a metate, the mixture placed in a pan and worked with the hands until it attained a thick consistency. Formerly the raw beans were ground on a metate into flour, at present a meat grinder is used for this purpose. In either case the seed coats were winnowed from the flour. The mesquite flour was usually made into bread as well as into a sort of pancake, which these Indians regarded as most delicious. Frequently the beans were cooked with meat, and the seed coats spit out as the combination was eaten. Gregg *(8:*102), evidently referring to these Apache of New Mexico, wrote that the mesquite pod was ground for flour with which to make their favorite pinole.

Occasionally the pods containing the seeds were boiled in water until the mixture turned red, after which the pods were taken out and mashed by hand, then put back in the container and boiled again until the water had been almost all boiled off. This constituted a sort of pudding.

Similarly the yellow fruits of the screw bean or tornillo *(Strombocarpa pubescens)* were extensively gathered, dried, and stored in sacks. The pods, which are somewhat sweeter than those of the mesquite, might be chewed and eaten raw as a delicacy but they were more commonly dried,

2: Castetter and Opler N, E-5 (1931-1934)1936
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252 washed, ground into flour, and made into a sort of bread.
262 Both this and the mesquite bread are still extensively used by these Apache. This was also reported by Bourke *(2:*50) and by Standley *(28:*458).

252 In the fall of the year the pods of the New Mexican
251 locust *(Robinia neomexicana)* were occasionally eaten raw.
262 However, they were more often cooked, stored, and utilized
137 similarly to those of the mesquite. The large clusters of pink flowers were gathered in late June, boiled, and eaten as a vegetable; or they might be stored in bags, and when wanted, re-cooked.

252 The Apache also utilized as food the small wild potato
262 *(Solanum jamesii)*, common in the valleys, as well as *S.*
137 *fendleri*, found usually in the mountains. The potatoes of the former species were usually gathered in August, while those of the latter species were not gathered until the end of September. They were boiled unpeeled and thus eaten. The *S. jamesii* product was sometimes dried, stored, and later ground into flour for making bread.

The tuberous, rather sweet, but tough roots of the Indian potato or *camote de raton (Hoffmanseggia densiflora)*, which were to be found growing only on the flats, were eaten either raw or cooked.

All species of oak, except one, go under the name *tcintcile; Quercus grisea* was known as *tcintcile donagogade*, "oak that never dies," and its acorns were used for food as were those of the Gambel oak *(Q. Gambelii)* although the fruits of the latter are not so sweet as those of the live oak and were, therefore, not as extensively used. In any event
[251] the acorns were frequently gathered when ripe, roasted slightly, then pounded and mixed with dried meat or fat and the mixture stored away in hide containers. The fruit might also be eaten raw. Walnuts or nogales *(Juglans major)* ripened in September, when they were gathered,
[251] pounded with clubs to remove the hulls and washed. The nut meats were often eaten raw, but were at times mixed with mesquite gravy or ground and combined with roasted mescal, and the mixture stored. The Warm Springs Apache

2: Castetter and Opler N, E-5 (1931-1934)1936
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252 262 137 way. Children commonly ate the sweet bark of sumac *(Rhus cismontana)* as a delicacy.

263 222 139 Not unlike the above was the obtaining of sugar from the box elder maple *(Acer negundo)*. In olden times, before sugar was easily obtainable commercially, these Indians secured material for sweetening by boiling the inner bark, and outer portions of the wood just beneath the bark, until the sugar which it contained crystallized out. Also scrapings from the inner bark were dried and placed in the *xel* (parfleche) for winter use. Likewise sap from the New Mexico maple *(Acer neomexicana)* was collected and boiled to obtain syrup and sugar.

[251]

252 262 137 A number of species of fruits were occasionally eaten but did not constitute important Apache foods. Among these were strawberries *(Fragaria bracteata)* and the purplish fruits of the wild privet *(Forestiera neomexicana)*, which were always eaten without preparation. Raspberries *(Rubus arizonicus)*, mulberries *(Morus microphylla)*, and hawthorne fruits *(Crataegus cerronis)* were either eaten fresh or pressed into pulpy cakes, dried, and stored for winter use.

[251]

Wild gooseberries and currants were quite commonly used. The purplish red fruits of the spiny-fruited gooseberry *(Ribes pinetorum)* has a pleasant acid flavor when ripe in September, at which time the spines may be easily brushed from the fruits. They were ground and compressed into cakes for winter consumption. Another gooseberry *(R. leptanthum)*, which has smooth fruits, somewhat larger than the former species, was eaten fresh or made into cakes for use during the winter. This species was the most eagerly sought because of the size of its fruits. The rather insipid fruits of two species of black currant, *Ribes wolfii* and *R. mescalerium*, were at times eaten without preparation by these Indians. Fruits of the former, in earlier times, were ground, dried, and pressed into cakes for storage, but are now used for jelly; those of the latter species, however, are usually cooked. Grapes *(Vitis arizonicus)*, which grow

[251]

[251] [178]

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252 262 137 *(Berberis haematocarpa)*, which ripened in September, and elderberries *(Sambucus microbotrys)*. These were cooked with a sweet substance, strained, and allowed to jell. Rose hips *(Rosa fendleri)* were at times eaten fresh but more frequently the pulp was squeezed into water and boiled to make jelly, while black chokecherries *(Prunus melanocarpa)*, which ripened in August, were either eaten fresh or [251] cooked to make a sort of preserve. Most commonly, however, the fruits were ground, pressed, and saved for winter, when the mass was cooked to make jelly. 262 Apache have used these chokecherries for many years. 184 Chiricahua Apache called the fruit of this particular variety "bear's food" and did not eat them until they saw the Mes- 262 calero Apache do so. Another species of chokecherry *(Prunus* sp.) which grew in the Mescalero country was never eaten by the Apache, and most of these Indians were afraid to touch the fruits. The few who did occasionally eat them said they were intoxicating, and that the only way to counteract their effect was to eat fresh meat. The [251] fruit of the hackberry, *Celtis reticulata*, which ripened late [252] in September, was either eaten fresh or ground, caked, and dried for winter use. Sometimes jelly was made from it.

252 In common with many other groups of southwestern 262 Indians these Apache utilized to a considerable degree the 137 three-leaved sumac *(Rhus trilobata)*. The red fruits were gathered from midsummer to fall and dried in the sun. After grinding between flat stones the pulp was mixed with water and sugar and cooked. This jam was formerly commonly eaten with bread made of sunflower seeds and with prepared mescal. The fruits of *Rhus microphyllus* were similarly utilized.

Wild plants used as greens by the Apache, as well as other Indians of the Southwest, were red root or tumbleweed *(Amaranthus graecizans)*, purslane *(Portulaca oleracea)*, lamb's quarter, often called Indian spinach *(Chenopodium alba)*, leaves of pigweed *(Amaranthus retroflexus)*, the leaves of *Rumex occidentalis*, and osha or chuchupate *(Ligusticum porteri)*; all these are still utilized at the pres-

2: Castetter and Opler N, E-5 (1931-1934)1936
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263 137 ous Indian groups of the Southwest was chimaja, also known as "wild celery" *(Cymopterus fendleri)*, and these Apache used the leaves for flavoring soups and meats. It was gathered when in flower or seed and had a mild flavor intermediate between that of celery and carrot. The leaves were used [262] in combination with other green plant parts and the roots [252] were eaten raw.

262 252 137 Seeds of many plants held an important place in the Apache diet, one of the more important ones being red root or tumbleweed *(Amaranthus graecizans)*. The inflorescences were pulled from the plant, threshed by rubbing between the hands, and the seeds winnowed and ground to make flour for bread. Other species of Amaranthus, especially *A. retroflexus*, the pigweed, were similarly utilized. Four species of grass—dropseed *(Sporobolus cryptandrus)*, *Muhlenbergia* sp., *Panicum bulbosum minor*, and grapevine mesquite grass *(Panicum obtusum)*—were also used for food, the seeds of the first three being threshed, winnowed, and ground into flour for bread. Seeds of the dropseed grass were boiled and eaten as porridge, while those of *Panicum obtusum*, as well as *Panicum bulbosum*, were ground to make gravy and mixed with meat. The small seeds of the shepherd's purse *(Capsella bursa-pastoris)* and fetid marigold *(Dysodia papposa)* were secured by cutting off the tops of the plants and beating them on a hide. Then [251] the seeds were winnowed in a basket tray in the wind. After drying they were stored and, when needed, ground into flour for bread. Sometimes the seeds were roasted without grinding and combined with other foods.

Ripe sunflower seeds *(Helianthus annuus* and *H. canus)* were gathered in the fall of the year by threshing. Those of the former species were also harvested when dead ripe, by women, who placed a basket under the plant and sharply struck the back of the sunflower head with a stick, knocking the seeds into the basket. They were sometimes ground and the flour used for a thick gravy, but more commonly this was sifted, made into dough, and baked on hot stones or in hot ashes. This kind of bread is still in common use. Cre-

2: Castetter and Opler N, E-5 (1931-1934)1936
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mony *(6:296)* reported the use of sunflower seeds among the Apache who ground them on a metate and made the resulting flour into cakes; Bourke *(2:47)* referred to the Apache and other Indian groups as having cultivated the sunflowers about 1870, the seeds of which were ground with corn into meal and made into cakes. Bourke's information that the Mescalero and Chiricahua Apache cultivated the sunflower is probably erroneous for these Indians are not known to have ever cultivated this plant. A jam made from the fruits of the three-leaved sumac *(Rhus trilobata)* was formerly extensively eaten with bread made from sunflower seeds. This jam is no longer in common use.

Seeds of other plants ground to make bread were notably false flax *(Camelina microcarpa)*, tansy mustard *(Sophia incisa)*, and the thistle *(Cirsium pallidum)*, none of which, however, were utilized extensively. The plants were threshed mechanically—false flax and thistle by shaking vigorously in the sack in which they were collected, tansy mustard by beating the pods with sticks. They were then winnowed, formerly in a hide because the seeds, especially those of false flax, would go through a burden basket, although a *tsa* (shallow basket) could be used. The flour from these species of seeds was made into dough and baked or the seeds might simply be boiled and eaten as were sunflower seeds.

The ripe pods of the vetch, *Vicia melilotoides*, as well as the wild pea, *Lathyrus leucanthus*, were cooked and eaten, or they might be dried and stored, to be soaked and boiled later.

BEVERAGES AND NARCOTICS

The most common and important drink among the Mescalero and Chiricahua Apache was *tulbai* (an Apache term meaning "water, grey" from the Apache *tu*—"water" and *bai* from *tibai*—"grey") One occasionally reads about the Apache using *tiswin*, also *twilt-kah-yee*. Cremony *(6:245)* wrote of an intoxicating beverage by the latter name, distributed freely by the Apache at their puberty